

FUSE CONNECTION BOX AND METHOD FOR PRODUCING THE SAME

BACKGROUND OF THE INVENTION

5           1.    Background of the Invention

          The present invention relates to a fuse connection box used for internal wiring of an automobile and a method for producing the same.

          2.    Description of the Related Art

10           Figure 1 and Fig. 2 show a fuse connection box of the related art. In Figs. 1 and 2, 10 represents a plastic housing, 12 a protective cover connected to the housing 10 through hinges 14, 16 a fuse (plate fuse), 16A an input terminal of a fuse 16, 16B an output terminal of a fuse 16 (there is no distinction between an input  
15           terminal and output terminal in a fuse, but for convenience in explanation, 16A is made the input terminal and 16B the output terminal), 18 an input side wire, and 20 an output side wire.

20           As illustrated, the fuse connection box of the related art is formed with a one-piece housing 10. On the other hand, input side wires 18 and output side wires 20 are produced by different processes. The assembly into the housing is also performed as a different process.

25           Figure 1 shows the state of an input side

terminal (not shown) attached to an end of the input side wire 18 assembled in the housing.

Next, as illustrated in Fig. 2, an output side terminal (not shown) attached to an end of the output side wire 20 is assembled in the housing 10. By attaching the fuses 16 and covering the assembly with the protective cover 12 in this state, the fuse connection box is completed.

As explained above, since the input side wires 18 and the output side wires 20 are produced by separate processes and are assembled in the housing 10 by a separate process, the output side wires 20 to be later attached to the housing 10 (sometimes the input side wires 18 as well) have to have the output side terminals attached to their ends covered by protective bags 24 as shown in Fig. 3 to prevent short-circuits or other problems in the output side terminals attached to the ends in the period from production to assembly in the housing 10. Further, the bags 24 had to be removed when assembling the output side terminals 22 in the housing 10.

In this way, the fuse connection box of the related art required bags 24 for protecting the terminals of the ends of the wires to be attached to the housing later. It suffers from the disadvantage that time is

taken for the bags 24 to be attached and removed.

#### SUMMARY OF THE INVENTION

An object of the present invention is to provide a  
5 fuse connection box and a method of producing the same  
which enable efficient assembly without requiring  
protective bags.

To achieve this object, according to a first aspect  
of the present invention, there is provided a fuse  
10 connection box comprised of a fuse and a housing for  
attaching the fuse, wherein said housing is divided into  
a first side housing in which a first side terminal of an  
end of a first side wire is assembled and a second side  
housing in which a second side terminal of an end of a  
15 second side wire is assembled, the first side housing and  
second side housing have portions for engagement with  
each other, and the first side housing and the second  
side housing are engaged to form a single housing in  
which the fuse can be attached.

20 By configuring the fuse connection box in this way,  
the fuse connection box can be assembled by separately  
assembling the first side terminal attached to the end of  
the first side wire into the first side housing and  
assembling the second side terminal attached to the end  
25 of the second side wire into the second side housing,

then connecting the first side housing and second side housing. Therefore, the bags for protection of the terminals used in the past become unnecessary and assembly can be performed efficiently.

5        Preferably, the first side housing and the second side housing are of identical shapes having first engagement portions at one end in the direction of arrangement of fuses and having second engagement portions of shapes engaging with the first engagement  
10       portions at the other end.

By doing this, since the first side housing and second side housing can be produced by the same mold, the cost becomes cheaper. Further, since there is no need to differentiate between the first side housing and second  
15       side housing, part control becomes easy.

Preferably, there is further provided a protective cover attached to the first side housing and second side housing so as to cover the fuse in a state where the first side housing and the second side housing are  
20       connected and the fuse is attached.

Preferably, the protective cover is formed with a protective frame for preventing action of an external force on an engagement portion between the protective cover and the first side housing and second side housing.

25       This is preferable to prevent the protective cover

from detaching.

According to a second aspect of the present invention, there is provided a method for producing a fuse connection box including a fuse and a housing for  
5 attaching the fuse, comprising the steps of producing separately a first side housing in which a first side terminal of an end of a first side wire is assembled and having an engagement portion and a second side housing in which a second side terminal of an end of a second side  
10 wire is assembled and having an engagement portion, engaging the engagement portions of the first side housing and second side housing to join them, and attaching a fuse to the joined housing.

15 BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects and features of the present invention will become clearer from the following description of the preferred embodiments given with reference to the accompanying drawings, in which:

20 Fig. 1 is a perspective view of a fuse connection box of the related art;

Fig. 2 is a perspective view of the state before attachment of fuses to a fuse connection box illustrated in Fig. 1;

25 Fig. 3 is a perspective view of an output side

terminal attached to an end of an output side wire in the state before assembling into the housing in the fuse connection box of the related art;

Fig. 4A and Fig. 4B show an embodiment of a fuse connection box of the present invention and a method of producing a fuse connection box, where Fig. 4A is a perspective view illustrating the state before connecting the input side housing and output side housing and Fig. 4B is a perspective view of the state after connecting the two housings;

Fig. 5 is a perspective view of the state before attaching the fuses in the housing illustrated in Fig. 4B and covering them with a protective cover; and

Fig. 6 is a sectional view of the state of connection of the protective cover and housing after covering by the protective cover from the illustrated state.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred embodiment of the present invention will be described in detail with reference to the drawings.

Figures 4A and 4B to Fig. 6 show an embodiment of the present invention. This fuse connection box, as shown in Fig. 4A, is comprised of an input side housing 26A serving as a first side housing of the present invention

in which input side terminals (not shown) of ends of  
input side wires 18 serving as first side wires of the  
present invention are assembled and an output side  
housing 26B serving as a second side housing of the  
5 present invention in which output side terminals 22 of  
ends of output side wires 20 serving as second side wires  
of the present invention. The method of assembling the  
input side terminals in the input side housing 26A and  
the method of assembling the output side terminals 22 in  
10 the output side housing 26B are similar to those of a  
housing of the related art.

The input side housing 26A and the output side  
housing 26B are identical in shape and have guide pieces  
28 and engagement projections 30 (first engagement  
15 portions) formed at the outside surface at one end of the  
direction of arrangement of the terminals and have  
engagement frames 32 (second engagement portions) of  
shapes engaging with the engagement projections 30 at the  
other end. Further, the input side housing 26A and the  
20 output side housing 26B are further formed with  
engagement projections 34 for attaching the later  
described protective cover to the top of the two ends of  
the direction of arrangement of terminals.

When the input side housing 26A and the output side  
25 housing 26B configured in this way are made to face each

other as illustrated in Fig. 4A and are pushed together so that the guide pieces 28 are inserted inside the engagement frame part 32, the engagement frame parts 32 engage with the engagement projections 30 as illustrated in Fig. 4B. As a result, the input side housing 26A and the output side housing 26B are connected with each other and a single housing 26 able to have fuses attached to it is formed.

Next, the fuses 16 are attached to the housing 26 as illustrated in Fig. 5 and the protective cover 36 is attached. The method of attaching the fuses 16 is the same as with the fuse connection box of the related art. The protective cover 36 is formed with engagement pieces 38 for engagement with the engagement projections 34 of the housing 26 (see Fig. 6). By engaging the engagement pieces 38 with the engagement projections 34, the protective cover 36 is attached to the housing 26. Further, the protective cover 36 is formed with a protective frame 40 so as to surround the engagement portions of the engagement pieces 38 and engagement projections 34. This protective frame 40 is designed to prevent external force from being applied to the engagement portions of the engagement pieces 38 and the engagement projections 34 and to thereby keep the protective cover 36 from detaching from the housing 26.



As described above, according to the present invention, since the housing is divided into an input side housing serving as the first side housing and an output side housing serving as the second side housing, the assembly of the input side terminals attached to the ends of the input side wires serving as the first side wires into the input side housing and the assembly of the output side terminals attached to the ends of the output side wires serving as the second side wires in the output side housing can be performed by separate processes. Next, by connecting the input side housing and the output side housing, the fuse connection box can be assembled. As a result, it is possible to omit the bags for terminal protection which had been used in the related art and to efficiently assemble the fuse connection box.

While the invention has been described with reference to specific embodiment chosen for purpose of illustration, it should be apparent that numerous modifications could be made thereto by those skilled in the art without departing from the basic concept and scope of the invention.